THE INSTITUTE OF PHYSICS

47, BELGRAVE SQUARE, LONDON, S.W.1

BULLETIN

No. 10 *Information in this circular is not intended for general publication: your copy should not therefore be passed to a library.* OCTOBER 1950

DIARY OF INSTITUTE MEETINGS

Members may bring guests to any of the meetings listed below unless otherwise indicated. Individual notification has been or will be sent to the members of the Branch or Group concerned. Other members of the Institute may obtain further particulars from the Secretary of the Institute.

Tuesday, October 17th (Electronics Group), at 5.30 p.m., at the Institute's House, 47 Belgrave Square, S.W.1. Mr. J. Pollard, A.Inst.P. (Services Electronics Research Laboratories). **"Some Investigations into the Mode of Action of Vapour Pumps."**

Wednesday, October 18th (North Eastern Branch), at King's College, Newcastle-on-Tyne. Professor W. E. Curtis, F.R.S., F.Inst.P. (President of the Institute). **"The Training of a Physicist for Industry."**

Thursday, October 19th (Midland Branch), at 5.0 p.m. Provisionally at the University, Edmund Street, Birmingham. Annual General Meeting and Chairman's Address, **"Industrial Research at the Dunlop Research Centre."**

Friday, October 20th (Manchester and District Branch), at 7.0 p.m., at the New Physics Theatre, Manchester University. Dr. H. L. Penman, F.Inst.P. (Rothamsted Experimental Station). **"The Role of Vegetation in Meteorology, Soil Mechanics and Hydrology."**

Saturday, October 21st (South Wales Branch), at 2.0 p.m., at University College, Cardiff. Professor W. E. Curtis, F.R.S., F.Inst.P. (President of the Institute). **"The Training of a Physicist."**

Tuesday, October 24th (London and Home Counties Branch), at 5.30 p.m., at the Institute's House, 47 Belgrave Square, S.W.1. Dr. H. R. Lang, F.Inst.P. (Secretary and Editor, The Institute of Physics). **"The Preparation and Publishing of a Scientific Paper."**

Tuesday, October 24th (Scottish Branch), at 7.0 p.m. in the Natural Philosophy Department of the University of Glasgow. Professor J. C. Gunn (University of Glasgow). **"Theory and Experiment in Modern Physics."**

Wednesday, October 25th (Midland Branch). A visit to the newly established Research Centre of the Dunlop Rubber Company, Erdington, Birmingham.

Wednesday, October 25th (Education Group), at 3.0 p.m., at Fyvie Hall, The Polytechnic, Regent Street, London, W.1. Lord Eustace Percy. **"Technical Universities."** (Admission by ticket obtainable from the Secretary of the Institute.)

Wednesday–Saturday, October 25th–28th. Conference on **"Some Aspects of Fluid Flow,"** at Ashorne Hill, Nr. Leamington Spa. Details and application forms for tickets may be obtained from The Secretary of the Institute.

Friday, October 27th (Industrial Spectroscopy Group), at 10.0 a.m. Autumn meeting at the Institute's House, 47 Belgrave Square, S.W.1. The Annual General Meeting of the Group will be at 5.30 p.m.

Tuesday, October 31st (Scottish Branch), at 7.0 p.m. in the Natural Philosophy Department of the University, Drummond Street, Edinburgh, Mr. W. D. Oliphant (Ferranti Ltd.). **"Vacuum Physics."**

Saturday, November 4th (South Wales Branch), at 2.0 p.m., at Cardiff. Professor A. Tustin (University of Birmingham). **"Principles and Applications of Automatic Control."**

Monday, November 6th (Scottish Branch), at 4.30 p.m., at University College, Dundee. Professor Kathleen Lonsdale, F.R.S. (University College, London). **"Neutron Diffraction."**

Tuesday, November 7th (Education Group), at 5.30 p.m. at the I.E.E., Savoy Place, London, W.C.2. Joint Meeting with the Education Discussion Circle of the I.E.E. on **"The Teaching of Physics to Engineers."**

Tuesday, November 7th (North Eastern Branch), at King's College, Newcastle-on-Tyne. Dr. A. J. Maddock, F.Inst.P. (British Scientific Instrument Research Association) on **"Voltage Stabilisers."**

Tuesday, November 7th (Scottish Branch), at 7.0 p.m., at the Natural Philosophy Department, University of Glasgow. Professor Kathleen Lonsdale, F.R.S. (University College, London). **"Neutron Diffraction."**

Friday, November 10th (Industrial Radiology Group), at 6.30 p.m. at the Institute's House, 47 Belgrave Square, S.W.1, a meeting on **"Ultrasonic Inspection."**

Tuesday, November 14th (Electronics Group), at 5.30 p.m., at the Institute's House, 47 Belgrave Square, S.W.1. Mr. M. Ryle (Cavendish Laboratory). **"Radio Astronomy."**

Wednesday, November 15th (London and Home Counties Branch), at 5.30 p.m., at the Institute's House, 47 Belgrave Square, S.W.1. Mr. J. A. Hall (National Physical Laboratory). **"Temperature Measurement."**

Thursday–Friday, November 16th–17th (X-Ray Analysis Group). Conference at the Royal Society of Tropical Medicine and Hygiene. Further details to be announced later.

Friday, November 17th (Manchester and District Branch), at 7.0 p.m., at the New Physics Theatre, Manchester University. Dr. E. C. Bullard, F.R.S. (National Physical Laboratory). **"The Earth's Magnetic Field."**

Tuesday, November 21st (Scottish Branch), at 7.0 p.m. in the Natural Philosophy Department of the University of Glasgow. Mr. A. C. Van Dorsten (Philips Gloeilampen Fabriken, Eindhoven). **"The Work of the Philips Organization."**

Thursday, November 23rd (Midland Branch), at 5.0 p.m. Provisionally at the University, Edmund Street, Birmingham. Mr. B. O. Payne, A.Inst.P., **"Recent Developments in Phase Contrast Microscopy."** A small demonstration of equipment for phase contrast microscopy has been arranged.

Tuesday, November 28th (Scottish Branch), at 7.0 p.m. in the Natural Philosophy Department of the University of Glasgow. Mr. W. J. Lloyd (Philips Electrical Ltd.). **"The Electron Microscope."**

Wednesday, November 29th (Scottish Branch), at 7.0 p.m. in the Natural Philosophy Department of the University, Drummond Street, Edinburgh. Mr. W. J. Lloyd (Philips Electrical Ltd.). **"The Electron Microscope."**

Thursday, November 30th (Scottish Branch), at 5.0 p.m. in the Natural Philosophy Department, University College, Dundee. Mr. W. J. Lloyd (Philips Electrical Ltd.). **"The Electron Microscope."**

NOTICES TO MEMBERS

Forthcoming Exhibition

The Royal Photographic Society are holding their 95th Annual Exhibition in the Society's House, 16 Princes Gate, S.W.7, from Friday, September 15th until Sunday, October 15th, from 10.0 a.m. to 8.0 p.m. daily (Saturdays 10.0 to 5.30 p.m., Sundays 2.30 to 5.30 p.m.). Admission is without charge.

After the London display the whole of the Exhibition will be transferred to the Laing Art Gallery, Newcastle-upon-Tyne, from Saturday, October 28th.

Summer School and Conference on Dielectrics, 1951

The Department of Theoretical Physics and the Department of Extra-Mural Studies of the University of Liverpool, in co-operation with The Institute of Physics and with the support of the British Electrical and Allied Industries Research Association, will hold a Summer School and Conference on Dielectrics for one week in July 1951. The Summer School will take place between July 19th and 21st, and the Conference between July 23rd and 25th. Lectures will be given by H. Fröhlich and others. Discussions at the Conference will be opened by A. R. von Hippel, Willis Jackson, J. G. Kirkwood, M. Magat, J. C. Slater, C. P. Smyth, S. Whitehead and others.

Exhibition

An Exhibition is being held at the Science Museum, South Kensington, London, S.W.7, to celebrate the Centenary of the laying of the first Submarine Cable. The Exhibition will be open until October 28th from 10.0 a.m.–6.0 p.m. daily and 2.30 p.m.–6.0 p.m. Sundays. Admission is free at all times.

A handbook entitled *100 Years of Submarine Cables* has been prepared by G. R. M. Garratt, M.A., M.I.E.E., and is on sale, price 2s. 6d.

Scottish Branch Activities

In addition to a very full programme of lecture meetings, the Committee of the Scottish Branch of the Institute have again arranged a course of lectures on Atomic and Nuclear Physics. The course of fifteen weekly lectures to be held at the University, Glasgow, begins on October 27th, and will be given by four Fellows, Professor Dee, Mr. Atkinson, Dr. Lenihan and Dr. McFarlane. The first lecture will be open to all interested, but the subsequent lectures will be confined to members of the Institute. The course is similar in structure to that which was given in 1949–50, but the detailed content will be different, and it is hoped that members who attended the previous course will find it interesting and profitable.

The Branch has also arranged a course of six lectures by Dr. Lenihan on Industrial and Medical Applications of Nuclear Physics. These will be given on Friday evenings in the University College, Dundee, and will be open to all interested.

Recognition of Technical Colleges

Two more colleges, Guildford Technical College and Loughborough College, have now been recognized by the Board after inspection by representatives of the Membership Committee. Recognition implies that the Board is satisfied that a college has adequate facilities and staff to provide a thorough training and education in physics and to give a reasonable opportunity for the development of a student's personal and cultural qualities; thirty-two colleges are now recognized by the Institute. Students of colleges which are not recognized by the Institute are not eligible for admission to the Institute as Students, nor will their courses of study normally be held to comply with the educational requirements of the regulations governing admission to the grades of Graduate or Associate.

Membership Committee Interview Panel

The Interview Panel of the Membership Committee, to which are referred all applications about which written evidence is insufficient, consists of two examiners, each appointed for three years, and the Chairman of the Membership Committee or a deputy. Mr. H. P. Rooksby (Fellow) retired on September 30th after three years' most valuable service to the Panel and the Committee and Mr. A. E. De Barr (Fellow) has been appointed to replace him. The other examiner is Mr. F. Y. Poynton (Fellow) who has served for two years and now becomes chairman of the Panel.

Choice of Journals for 1951

All Fellows and Associates who may for 1951 wish to alter their instructions about Institute journals are asked to do so as early as possible and, in any case, before December 1, 1950. Wrappers for the despatch of journals have to be prepared and sent to the printers some time before publication date and, unless the above notice is given, it will be impossible to effect alterations before the January wrappers are prepared. A similar request is made to members of other grades who pay by bankers' order and whose orders for journals are therefore continued automatically. Those who pay by cheque are, of course, asked to renew their journal orders when paying subscriptions; copies are sent when their orders and remittances are received.

In sober truth, whatever homage may be professed, or even paid, to real or supposed mental superiority, the general tendency of things throughout the world is to render mediocrity the ascendant power among mankind.

JOHN STUART MILL.

REPORTS AND OFFICIAL PUBLICATIONS

The following Reports and Official Publications have been received and are deposited in the Members' Room:

Report of the Work of the Tin Research Institute 1949. Pp. 16. (London: Tin Research Institute.)

Report on the Canadian International Trade Fair, Toronto, 1950. Pp. 12. (London: The Gauge and Tool Makers' Association.)

The British Council Report for the Year 1949–50. Pp. 130. (London: The British Council.) Includes a description of the Council's work and objectives in regard to the pure and applied physical and biological sciences.

British Scientific Instrument Research Association. Pp. 24. (London: British Scientific Instrument Research Association.) An illustrated brochure describing the facilities offered by the various departments of the Association.

NEWS OF MEMBERS

Fellows

The following professional appointments have been notified:

F. Happey—Head of Department of Textile Industries, Bradford Technical College.

H. T. Jessop—Reader in Photoelasticity, University College, London.

H. V. Walters—Durham University Appointments Board, Kings College, Newcastle-upon-Tyne.

Associates

The following professional appointments have been notified:

B. O. Daws—Assistant Lecturer in Physics, King's College of Household and Social Science, London.

G. M. Michie—Senior Technical Officer, British Steel Founders' Association, Sheffield.

F. A. Purdy—Senior Science Master, Queen Elizabeth's Grammar School, Mansfield.

A. G. Randell—Physicist, Research Laboratories of the British Thomson-Houston Co., Rugby.

L. C. Spark—Botany Department, Leeds University.

Mme. A. R. Weill—Ingenieur Contractuel des Constructions et Armes Navales, Laboratoire de Physique des Metaux Services Techniques de Constructions et Armes Navales, Paris.

Graduates

The following professional appointment has been notified:

A. Harrison—Research Physicist, K.D.G. Instruments Ltd., Croydon.

CONTRIBUTIONS FROM MEMBERS

How to Write a Mathematical Paper

In the days before the Nations were United an Eastern Prince found himself in a difficult position because he was faced by contrary demands from two great Western Powers. As a token of his desire to satisfy both, he sent forth an edict that all carpets should henceforth be measured in cmins. To do this the buyer or seller or other interested party was required to stand at a corner of the carpet and to hold his arms out at an angle. The side of the carpet to the right was to be measured in inches, and that to the left in centimetres. No mention was made in the edict concerning which corner was to be the starting point, and this was deliberate, for neither of the two great Powers could then claim that the other had received preferential treatment. But much disputation arose in the land, for while all agreed that a carpet 300 cm long and 144 in wide was the equal of a carpet 118 in long and 366 cm wide, since both these measurements could be got from the same carpet by standing at different corners, none could tell whether a carpet 300 cm long and 144 in wide was the equal of one 144 cm long and 300 in wide.

All efforts to resolve this difficulty by normal means failed. The Councillors of State sat in continuous session, but could do no more than announce that in this emergency it was necessary to maintain the morale of the people, and to this end all party differences must be forgotten, whatever the cost, and all must pull together. The Permanent Scribe to the Court thought that the only solution was to make it an offence, punishable with the severest penalties, for anyone to manufacture a carpet except under licence, and in prescribed size and form. The manufacturers of carpets felt that there was no serious difficulty except that occasioned by the importation of foreign carpets which did not conform to the long-established traditions of the country, but which were bought in large numbers by the less responsible members of the community. A heavy import duty was the only satisfactory solution. The High Priest recommended a return to the faith of their forefathers. The Prince of this state would accept none of this advice, and sat down to think for himself. He thought of the thousands of carpets in his country, all of them, or nearly all, rectangles, and thus of the philosopher who had tried so hard to interest him, in his youth, in rectangles. The philosopher was the man he needed. The philosopher was therefore dragged forth from his books and brought before his ruler, who set before him the problem which so far had puzzled all his advisers.

The philosopher thought for a long time, and then replied: "Sire, if a man stand at one corner of a carpet the length to his right hand will measure so many inches and that to his left hand so many centimetres, but if the man stand at the next corner on either hand that length to his right hand will be measured in inches which before was to the left hand and measured in centimetres, and the number thereof will be in the inverse

ratio of two and twenty-seven fiftieths to the number which was first measured. And likewise the number of the length to the left hand will be in the direct ratio of two and twenty-seven fiftieths to the number which was first measured for that side. But the carpet is in no wise changed since the man has but moved from one corner to the next. Wherefore, if R be the number of inches measured to the right hand at one corner and L be the number of centimetres measured to the left hand at the same corner, the size of the carpet depends only on R and L. But the measurements to the right and left at another corner will be L/x inches and xR cm, wherein x means two and twenty-seven fiftieths. Wherefore if S be the size of the carpet

$$S = F(R, L) = F(L/x, xR)$$

Sire, I am but a humble subject, and do not presume to understand affairs of State, but I doubt not that it is for reasons of state that we now measure in cmins. But reasons of state may change, and in times to come it may be politic to measure our carpets in arshines and tsouen. When that should happen then x will no longer be two and twenty-seven fiftieths. But for the greater comfort of our people the way in which the size of our carpets is measured should remain always the same, no matter how reasons of state may change our units of measurement.

"But $F(R, L)$ cannot always be the equal of $F(L/x, xR)$ except that it also equals $F(R \times L)$.

"Wherefore do I say that to measure the size of a carpet the number of inches to the right hand shall be multiplied together with the number of centimetres to the left hand."

And upon this the whole Court stood amazed, yet agreeing that the philosopher had indeed spoken wisely, for the way of measuring could be plainly set forth for the common people, so that the Prince of that land, taking the philosopher privately aside, said to him, "I understand you no better now than in my youth. Nevertheless you have served your country well, and I am minded to grant thee much honour." And the philosopher was made Special Counsellor to the Officers of the State, and given many honours and much, but not too much, gold. But never again was he able to study his beloved books.

E. W. H. SELWYN.

APPOINTMENTS VACANT

The inclusion of particulars of a vacancy must not be taken to imply that the Institute necessarily approves of the terms offered or that might be offered. Candidates should satisfy themselves that these are satisfactory, and they may always refer to the Institute for advice. A suggested form of contract under which a qualified physicist might reasonably be expected to serve is available on request.

Applications are invited from a **Senior Physicist or Electrical Engineer** to take charge of a section concerned with the design of microwave aerial or waveguide systems. Candidates should be preferably 30–35 years of age with a good academic background and with experience or an intimate knowledge of modern developments in these fields. The position calls for an ability to design these systems from a knowledge of the theory of diffraction and electromagnetic waves and from experience of established techniques. The work of a number of graduates and assistants on the experimental design and testing of the systems must be planned and controlled. The post should be particularly attractive to a member of a microwave aerial team during the war who has kept up to date with more recent published work. Applications should be sent to the Personnel Officer (Ref. GBLC/KTH), Research Laboratories of The General Electric Co., East Lane, North Wembley, Middx., and should contain details of academic qualifications, age and experience.

Graduate engineers and **physicists** are required by the Research Laboratories of The General Electric Co., Ltd., East Lane, North Wembley, Middx., for work in the fields of (*a*) High Frequency Heating, (*b*) Illumination, (*c*) Radio valves, (*d*) Communications and (*e*) Waveguides. Vacancies exist for junior and senior graduates and some will be especially suitable for younger ex-servicemen, whose experience is limited to Service work. Applicants should write to the Personnel Officer (Ref. GBLC) quoting details of age, experience and qualifications.

An **Electronic Engineer** is required for laboratory development work on measuring and control equipment for works use. Candidates should preferably have a degree in Physics or Electrical Engineering and some post-graduate experience. Salary according to age and experience. Applications should be made to the Director of Research, G.K.N. Research Laboratories, Manor Works, Ettingshall, Wolverhampton.

Lever Brothers and Unilever Limited invite applications from Physicists of considerable university and/or industrial research experience for the post of **Senior Physicist** in their Research Department at Port Sunlight, Cheshire. The holder of the post will be responsible for the direction of the research of a group of physicists working on a variety of problems of general physics. Salary, £2,000 per annum. Comprehensive superannuation scheme. Applications should be addressed to Lever Brothers and Unilever Ltd., Personnel Division (FMD-4), Unilever House, Blackfriars, London, E.C.4.

The British Ceramic Research Association has a vacancy for an instrument maker in a section working on the development of instruments for use in the Pottery Industry. Applicants should be skilled and experienced in fine instrument practice. The post is pensionable and offers scope for interesting work.

Applications, containing details of experience, should be sent to Director of Research, British Ceramic Research Association, Queens Road, Penkhull, Stoke-on-Trent.

The British Boot, Shoe and Allied Trades Research Association have vacancies for non-graduate staff (male or female) in their physical and chemical laboratories. The work is interesting and varied. Specialized knowledge of footwear manufacture and materials is not expected, but laboratory experience is essential. Age preferably 20 to 28. Initial salary £250 to £400 according to experience and qualifications. Write, giving full particulars, to Director, Satra House, Rockingham Road, Kettering.

Physicist.—Nash & Thompson Ltd. require a Junior Physicist for work on the design and development of Scientific Instruments. Honours degree essential, some experience an advantage. Starting salary within range £400–£500. Write: Oakcroft Road, Tolworth, Surrey.

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